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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/037,067

Applicant(s)

CLUNE ET AL.

Examiner

George C. Neurauter, Jr.

Art Unit

2447

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 February 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,5-8,10,11 and 13-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,5-8,10,11 and 13-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-940)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claims 1, 5-8, 10-11, and 13-25 are currently presented and have been examined.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114 was filed in this application after a decision by the Board of Patent Appeals and Interferences, but before the filing of a Notice of Appeal to the Court of Appeals for the Federal Circuit or the commencement of a civil action. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 2 February 2011 has been entered.

Response to Arguments

Applicant's arguments with respect to claims 1, 5-8, 10-11, and 13-25 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 15 and 23-25 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

MPEP 2106.01 states:

"Similarly, computer programs claimed as computer listings *per se*, i.e., the descriptions or expressions of the programs, are not physical "things." They are neither

computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer which permit the computer program's functionality to be realized...Since a computer program is merely a set of instructions capable of being executed by a computer, the computer program itself is not a process and Office personnel should treat a claim for a computer program, without the computer-readable medium needed to realize the computer program's functionality, as nonstatutory functional descriptive material."

MPEP 2106 states:

"Data structures not claimed as embodied in computer-readable media are descriptive material *per se* and are not statutory because they are not capable of causing functional change in the computer. See, e.g., *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure *per se* held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention which permit the data structure's functionality to be realized."

Claims 15 and 23-25 recite an apparatus containing a circularly linked list data structure and a processing engine which may be interpreted as only being software *per se*, therefore, these claims are considered to be nonstatutory functional descriptive material and are not considered to be patentable subject matter.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 5-8, 10-11, and 13-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 5-8, 10-11, and 13-25 recite a "circularly linked list" comprising "destination nodes". Claims 1, 5-8, 10-11, and 13-14 recite "entering the list at an initial destination node...wherein the initial destination node is the destination node from which the data was received..." Claims 15 and 23-25 similarly recite "identifying the destination node from which the data was received..." Since "nodes" may be interpreted as either being a computer or a data structure component which is used to store data, especially in the context of linked lists, and in further view of claims 10, 18 and 22, it is unclear as to exactly what element a "destination node" is.

Claims 1, 5-8, 10-11, and 13 recite "identifying" "destination nodes of a multicast session in a network having a plurality of nodes". The claims then recite "receiving data intended for transmittal to the identified destination nodes". It is unclear what actually "identification" has been performed as no specific steps to accomplish such is recited.

Claim 14 and 16-22 recites "the destination nodes". This limitation has insufficient antecedent basis in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 5-8, 10-11, and 13-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,219,352 to Bonomi et al in view of "The Art of Computer Programming: 2nd Edition" to Knuth.

Regarding claim 1, Bonomi discloses a method for identifying destination nodes of a multicast session in a network having a plurality of nodes, comprising forming a linked list ("queue") further comprising a list of destination nodes, each destination node having an associated destination address for receiving multicast data ("port mask") and a link to a next destination node in the list for processing ("head pointer"); receiving data ("newly arrived" "cell" or "frame") intended for transmittal to the identified destination nodes of the multicast session; entering the list at an initial destination node, wherein the initial destination node is the destination node from which the data was received; traversing the linked list to process each destination node sending the multicast data to the associated destination address for each destination node other than the initial destination node and using the link to determine the next destination node for processing; and terminating the traversing step when all linked destination nodes have been processed (terminating at the "tail pointer"), such that the destination node from which the data was received is excluded from the multicast session. (see at least column 2, lines 45-67, column 10, line 61-column 11, line 35; column 13, lines 40-column 14, line 16, specifically column 13, lines 46-60 and column 14, lines 3-16) (it is understood in the art that in a multicast session, received "cells" are placed in an "cell order" in which a "source" node sends data to a "target" node or nodes and that the data is transmitted to the "targets" and not the "source", as sending data back to a "source" is considered to be unconventional and undesired since the "source" already has the data)

Bonomi does not expressly disclose a circularly linked list, however, Knuth does disclose a circularly linked list (page 270, section 2.2.4 "Circular Lists", specifically "A

circularly-linked list...has the property that its last node links back to the first...It is then possible to access all of the list starting at any given point")

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of these references since Knuth discloses that using a circularly linked list allows for entry into the list at any point (page 270, section 2.2.4 "Circular Lists", specifically "It is then possible to access all of the list starting at any given point"). In view of these specific advantages and that the references are directed to traversing linked lists or queues and entering a linked list at a given point, one of ordinary skill would have been motivated to combine these references and would have considered them to be analogous to one another based on their related fields of endeavor.

Regarding claim 5, Bonomi and Knuth disclose the method of claim 1.

Bonomi discloses wherein the received data includes an indicator identifying the destination node that is to be excluded from the multicast session. (column 14, lines 17-25)

Regarding claim 6, Bonomi and Knuth disclose the method of claim 5.

Bonomi discloses wherein the indicator identifies the destination node from which the data was received as the destination node to be excluded from the multicast session. (column 2, lines 45-67; column 14, lines 17-25).

Regarding claim 7, Bonomi and Knuth disclose the method of claim 1.

Bonomi discloses wherein the initial destination node is predetermined (column 13, lines 40-column 14, line 2, specifically column 13, lines 52-55)

Regarding claim 8, Bonomi and Knuth disclose the method of claim 1.

Bonomi discloses the method further comprising receiving data intended for transmittal to the identified destination nodes of the multicast session on an input port, and wherein the initial destination node is determined based on the input port. (column 10, lines 12-60, specifically lines 16-22; column 11, lines 18-47; column 14, lines 47-58)

Regarding claim 10, Bonomi and Knuth disclose the method of claim 1.

Bonomi discloses wherein the traversed destination node entries are the identified destination nodes of the multicast session. (column 13, lines 46-60)

Regarding claim 11, Bonomi and Knuth disclose the method of claim 1 wherein destination nodes for a plurality of multicast sessions are interleaved in the list, and wherein the destination nodes for each one of the plurality of multicast sessions are linked. (column 13, lines 18-25)

Bonomi does not expressly disclose a circularly linked list, however, Knuth does disclose this limitation (page 270, section 2.2.4 "Circular Lists", specifically "A circularly-linked list...has the property that its last node links back to the first...It is then possible to access all of the list starting at any given point").

Claim 11 is rejected since the motivations regarding the obviousness of claim 1 also apply to claim 11.

Regarding claim 13, Bonomi and Knuth disclose the method of claim 1.

Bonomi discloses wherein the link comprises a pointer at each destination node that points to another destination node such that the plurality of destination nodes are linked.

Bonomi does not disclose wherein the destination node entries are circularly linked, however, Knuth does disclose wherein entries are circularly linked (page 270, section 2.2.4 "Circular Lists", specifically "A circularly-linked list...has the property that its last node links back to the first...It is then possible to access all of the list starting at any given point").

Claim 13 is rejected since the motivations regarding the obviousness of claim 1 also apply to claim 11.

Claim 14 is rejected since claim 14 recites a method that contains substantially the same limitations as recited in claims 1 and 12 in combination.

Claim 15 is rejected since claim 15 recites an apparatus that contains substantially the same limitations as recited in claim 1.

Regarding claim 16, Bonomi and Knuth disclosed the method of claim 14.

Bonomi disclosed wherein the received data includes an indicator identifying the destination node that is to be excluded from the multicast session. (column 14, lines 17-25) (the data comes from a "source", therefore, the received cell indicates the "source" of the data)

Regarding claim 17, Bonomi and Knuth disclosed the method of claim 16

Bonomi disclosed wherein the indicator identifies the destination node from which the data was received as the destination node to be excluded from the multicast session. (column 2, lines 45-67; column 14, lines 17-25)

Regarding claim 18, Bonomi and Knuth disclosed the method of claim 14.

Bonomi disclosed wherein the initial destination node is predetermined. (column 13, lines 40-column 14, line 2, specifically column 13, lines 52-55)

Regarding claim 19, Bonomi and Knuth disclosed the method of claim 14.

Bonomi disclosed the method further comprising receiving data intended for transmittal to the identified destination nodes of the multicast session on an input port, and wherein the initial destination node is determined based on the input port. (column 10, lines 12-60, specifically lines 16-22; column 11, lines 18-47; column 14, lines 47-58)

Regarding claim 20, Bonomi and Knuth disclosed the method of claim 14 wherein the traversed destination nodes are the identified destination nodes of the multicast session. (column 13, lines 46-60)

Regarding claim 21, Bonomi and Knuth disclosed the method of claim 14.

Bonomi disclosed wherein destination nodes for a plurality of multicast sessions are interleaved in the list, and wherein the destination nodes for each one of the plurality of multicast sessions are circularly linked. (column 13, lines 18-25)

Regarding claim 22, Bonomi and Knuth disclosed the method of claim 21.

Bonomi disclosed wherein the link comprises a pointer at each destination node that points to another destination node such that the plurality of destination nodes are linked. (see Bonomi regarding "traversal" of "linked lists")

Bonomi does not disclose wherein the destination node entries are circularly linked, however, Knuth does disclose wherein entries are circularly linked (page 270, section 2.2.4 "Circular Lists", specifically "A circularly-linked list...has the property that

its last node links back to the first...It is then possible to access all of the list starting at any given point").

Claim 22 is rejected since the motivations regarding the obviousness of claim 1 also apply to claim 22.

Regarding claim 23, Bonomi and Knuth disclosed the apparatus of claim 15.

Bonomi disclosed the apparatus further comprising receiving data intended for transmittal to the identified destination nodes of the multicast session on an input port, and wherein the initial destination node is determined based on the input port. (column 10, lines 12-60, specifically lines 16-22; column 11, lines 18-47; column 14, lines 47-58)

Regarding claim 24, Bonomi and Knuth disclosed the apparatus of claim 15.

Bonomi disclosed wherein destination nodes for a plurality of multicast sessions are interleaved in the list, and wherein the destination nodes for each one of the plurality of multicast sessions are circularly linked. (column 13, lines 18-25)

Regarding claim 25, Bonomi and Knuth disclosed the apparatus of claim 24.

Bonomi disclosed wherein the link comprises a pointer at each destination node that points to another destination node such that the plurality of destination nodes are circularly linked. (see Bonomi regarding "traversal" of "linked lists")

Bonomi does not disclose wherein the destination node entries are circularly linked, however, Knuth does disclose wherein entries are circularly linked (page 270, section 2.2.4 "Circular Lists", specifically "A circularly-linked list...has the property that its last node links back to the first...It is then possible to access all of the list starting at any given point").

Claim 25 is rejected since the motivations regarding the obviousness of claim 1 also apply to claim 25.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George C. Neurauter, Jr. whose telephone number is (571)272-3918. The examiner can normally be reached on the hours between 8:30am-5:00pm Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joon Hwang, can be reached on 571-272-4036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/George C Neurauter, Jr./
Primary Examiner, Art Unit 2447